

limitations of the base and intervening claims. Applicants also acknowledge the withdrawal of the rejection of claims 34, 43, and 45 under 35 U.S.C. § 112, second paragraph, and of the rejection of claims 34, 36-38, 40-42, 47, and 48 under 35 U.S.C. § 103 as obvious over *Tate* in view of *Hiorth*.

II. Priority Under 35 U.S.C. §§ 119 and 120

In the present Office Action Summary, the Examiner checked the boxes indicating that none of the certified copies of the priority documents had been received by the Office. However, the Office Action Summary of Paper 11, dated March 5, 2003, indicates that all of these documents were received by the Office. Accordingly, clarification is respectfully requested.

III. Rejection Under § 103

Claims 34-38, 40-42, 47, and 48 have been rejected under 35 U.S.C. § 103(a) as unpatentable over *Tate* (U.S. Patent No. 4,035,322) in view of *Nishida* (U.S. Patent No. 6,186,658) and further in view of *Hiorth* (U.S. Patent No. 4,191,480) for the reasons disclosed at pages 2-7 of the present Office Action. Applicants respectfully traverse the rejection for at least the reasons set forth below.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the cited reference (or references when

combined) must teach or suggest all the claim limitations. See M.P.E.P. § 2143.

None of these criteria has been satisfied with respect to the modifications of *Tate* proposed by the Examiner.

A. The Requisite Suggestion or Motivation to Combine the Teachings of Tate and Nishida does Not Exist; Rather Tate and Nishida Teach Away from the Proposed Combination.

With respect to the first criterion, the Federal Circuit has recently stated that:

The factual inquiry whether to combine references must be thorough and searching. It **must be based on objective evidence of record**.... Thus the Board must not only assure that the requisite findings are made, based on evidence of record, **but must also explain the reasoning** by which the findings are deemed to support the agency's conclusion.

See *In re Lee*, 61 U.S.P.Q.2d 1430, 1433-34 (Fed. Cir. 2002) (emphasis added).

Further, "to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant." *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1316 (Fed. Cir. 2000). The mere fact that references **can** be combined or modified does not render the resultant combination obvious unless the prior art **also suggests the desirability** of the combination. See M.P.E.P. § 2143.01.

In the present Office Action, the Examiner admits that *Tate* fails to teach introducing a substance in liquid phase into plastic granules using a method comprising, *inter alia*, (1) step a) of independent claim 34, (2) step b) of independent claim 34, and (3) step c) of independent claim 34. See Office Action at page 3. The Examiner relies on *Nishida* to cure these deficiencies. *Id.* However, the Examiner

has failed to make a factual inquiry based on the objective evidence of record. Such an inquiry would have revealed that there is no motivation to make the proposed modifications at the time the invention was made, and in fact, that the cited references teach away from their proposed combination for at least the following reasons.

First, *Tate's* method is drawn to **preparing curable pellets** of polyethylene and copolymers thereof (see Abstract), whereas *Nishida* is drawn to **catalytic cracking of liquid feed stock at high temperatures** to produce gasoline or light olefins. See Abstract. Second, *Tate's* method involves coating **pellets of polyethylene** and/or copolymers with a liquid curing agent, whereas, in *Nishida's* method, the heat from the **silica alumina catalyst** vaporizes the feed stock (see e.g., col. 4, lines 1-2; col. 12, lines 8-14) and the oil vapors thus produced are later **separated from the catalyst** and the catalyst is recycled for further use (see e.g., col. 7, lines 31-35). Third, in *Tate's* method, the liquid curing agents **penetrate and diffuse into the pellets**, whereas *Nishida* discloses that "the contact reaction [with the **silica alumina catalyst**] can be conducted uniformly for **an extremely short period of time**...(approximately 0.1 to 1.5 seconds)." See col. 7, lines 49-55.

As *Tate* and *Nishida* involve the use of **different chemicals in different methods for different purposes** to obtain **different products**, one of ordinary skill in the art would not have been motivated to combine their teachings as proposed by the Examiner. Accordingly, for at least this reason, Applicants submit that the Examiner has failed to demonstrate a prima facie case of obviousness.

Moreover, *Nishida*, when properly considered as a whole, teaches away from the proposed combination with *Tate*. A reference must be considered in its entirety, including portions that would lead away from the claimed invention. See M.P.E.P. § 2141.02.

In the present case, *Tate* discloses "a method for preparing curable pellets of polyethylene and copolymers thereof...by mixing polyethylene pellets with a liquid curing agent at a temperature **below** the decomposition temperature of the curing agent and **below** the softening point of polyethylene and copolymers thereof." See Abstract (emphasis added). *Tate* repeatedly emphasizes the advantages of such an operating temperature. For example, at column 2, lines 38-49, *Tate* discloses that "temperatures below the thermal decomposition temperature of the curing agent increases the output of pellets from the plasticizing mixer by a factor of two to three," and that "by producing curable polyethylene pellets in which the curing agent has not been exposed to temperatures above the thermal decomposition temperature thereof both the extrusion rate and the quality of products extruded therefrom are enhanced." *Tate* also warns that "when the requisite mixing time is shortened only by raising the working temperature the working temperature must not be so high that the curing agent penetrates and diffuses into the pellets before it is uniformly dispersed throughout the pellets which can cause lack of uniformity in the concentration of curing agent penetrating into individual pellets" and that "if the working temperature is set near the softening point of polyethylene the pellets tend to cohere into lumps before or during agitation." See col. 4, lines 17-26. In *Tate's* description of the preferred embodiment, *Tate* discloses that the curing agent is

sprayed through the pellet mass after the pellet temperature has been stabilized at 50°C. See col. 3, lines 22-25.

In stark contrast, *Nishida* is drawn to "an apparatus for mixing a fluid feed stock, such as a heavy oil, and particles of a catalyst for **gasifying** the heavy oil." See Abstract and col. 1, lines 7-9 (emphasis added). It is well known that, in catalytic cracking processes, the heat from the catalyst **vaporizes** the feed stock and brings it up to the desired reaction temperature. See e.g., col. 4, lines 1-2; col. 12, lines 8-14 (emphasis added). "[A] rapid mixture of feed stock and a catalyst and vaporization thereof... is indispensable." See col. 1, lines 39-42. Accordingly, *Nishida* repeatedly teaches that the catalyst particles are heated to a temperature of 450-700°C. See e.g., col. 4, line 32; col. 6, lines 6 and 7; col. 7, lines 1 and 24; col. 12, line 7; Experiment 1 at col. 13, line 12; and Experiment 3 at col. 15, line 37.

As *Nishida*'s process **requires** temperatures high enough to vaporize liquid feed stock, such as between 450-700°C, whereas *Tate*'s process **requires** temperatures below the decomposition temperature of the curing agent and below the softening point of polyethylene and copolymers thereof, such as 50°C, the references **teach away** from the combination proposed by the Examiner. For at least this reason, the teachings of *Nishida* and *Tate* cannot be combined in the manner proposed by the Examiner. See M.P.E.P. § 2145 (D).

Accordingly, Applicants respectfully request withdrawal of this rejection for at least the foregoing reasons.

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B. The Requisite Reasonable Expectation of Success in the Proposed Combination of Tate and Nishida does not Exist.

With respect to the second criterion the Examiner must demonstrate to establish a prima facie case of obviousness, i.e., that there is a reasonable expectation of success in the proposed combination, the Examiner has again failed to meet her burden.

As discussed above, Tate teaches a method for preparing curable pellets of polyethylene and copolymers thereof by mixing polyethylene pellets at 50°C with a curing agent which coats and then penetrates the pellets. Nishida teaches an apparatus for mixing a fluid feed stock and a heated silica alumina catalyst for vaporizing the heavy oil wherein contact between the feed stock and the catalyst is only for an extremely short period of time. Accordingly, these references use **different chemicals** (polyethylene particles substituted for silica alumina catalyst particles and a liquid curing agent substituted for feed stock, such as a heavy oil) in **different methods** (coating and penetration of the curing agent into the polyethylene particles as opposed to vaporization of the feed stock during an extremely short contact period with the catalyst; 50°C as opposed to 450-700°C) for **different purposes** (to combine the curing agent and polyethylene pellet as opposed to cracking the feed stock) for **different products** (curable polyethylene pellets as opposed to gasoline or light olefins).

Based on the teachings of *Tate* and *Nishida*, one of ordinary skill in the art would expect that applying the process of *Nishida* to the polyethylene pellets and curing agent of *Tate* to be a **failure**. See, e.g., Tate at col. 2, lines 38-49, col. 4,

lines 17-26. Accordingly, one of ordinary skill in the art would not have had a reasonable expectation of success in the use of the very different chemicals in a very different way for a different purpose to obtain very different products as proposed by the Examiner. For at least this additional reason, Applicants respectfully request withdrawal of this rejection.

C. The Cited References, When Combined do not Teach or Suggest All of the Claim Limitations.

The Examiner admits that *Tate* and *Nishida* fail to teach introducing a substance in liquid phase into plastic granules using a method comprising, *inter alia*, step d) of independent claim 34, specifically, submitting the mixed granules so obtained to drying for a time sufficient to allow a substantially complete absorption of the substance in liquid phase by the granules. See Office Action at page 5. The Examiner therefore relies on *Hiorth* to cure this additional deficiency. *Id.*

Specifically, the Examiner cites column 4, lines 42-44 and paraphrases *Hiorth* as closing "that an apparatus of the static mixer category...can be provided downstream [to] the static mixing chamber 32 with a chamber wherein the mixed powder can be entrained in the air stream and then discharged through the exit 35." See Office Action at page 5 (emphasis in original). The Examiner then continues, asserting that it is her position that

the chamber, which is provided with the air stream and positioned downstream [to] the static mixing chamber 32, is in fact a drying chamber because after passing this chamber[,] the mixed powder is in condition to be discharged to through the exit, i.e., in a final dry condition.

Id.

However, Applicants submit that the Examiner's reasoning is both flawed and lacks any support in the objective evidence of record. First, the cited portion of *Hiorth*, namely column 4, lines 42-44, actually recites "[t]he mixed product is then, entrained in the air stream, discharged through an exit 35 **in the lower part of the mixing chamber.**" See col. 4, lines 42-44 (emphasis added). Accordingly, and as corroborated by Figure 1, the exit 35 is itself within the mixing chamber.¹ Second, *Hiorth* also contradicts the Examiner's assertion that "the mixed powder is...in a final dry condition." For example, *Hiorth* states that "[t]he resultant spray [in the O zone] which **after mixing** may have a **very sticky or adhesive consistency**, may now immediately be passed into a post-mixing and screw-conveyor system bale to handle plastic material." See col. 6, lines 54-58. Accordingly, *Hiorth* not only fails to teach drying the mixture in a drying chamber, but does not even contemplate it as an option.

Accordingly, for at least the foregoing reasons, Applicants submit that the cited references, when combined as proposed by the Examiner, **fail** to teach or suggest all of the limitations of at least independent claim 34. For at least this additional reason, Applicants respectfully request withdrawal of this rejection.

In light of the foregoing, Applicants respectfully submit that the Examiner has failed to establish a prima facie case of obviousness, and thus, request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

¹ Nevertheless, Applicants note that claim 34 does not require step (d) to be conducted in a separate chamber from step (c)

IV. Conclusion

In view of the foregoing remarks, Applicants respectfully request the reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account No. 06-0916.

Respectfully submitted,

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